APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,377	07/01/2003	Mark Edward Kane	3805-016-27 CIP	1196

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EXAMINER
NGUYEN, CUONG H

ART UNIT	PAPER NUMBER
3661	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/21/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>01 October 2006</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-14 and 22-24</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-5,7-12,14 and 22-24</u> is/are rejected.

7)☒ Claim(s) <u>6 and 13</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   This Office Action is the answer to the communication received on 10/11/2006.

2.   Claims 1-24 are pending in this application. Claims 1-14, and 22-24 are elected for examination.

Response

3.   Applicant argues that the cited references do not disclose a step of: repeating the determining step a plurality of time. J. Mar et al. teach this step by doing integrated calculation or adding small segments together to obtain a total distance with the time period is one second with different monitoring systems (see J. Mar et al., Figs.1 & 4, and section 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> *(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.*

4.   Claims 1-5, 7-12, 14, 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar et al. (US Pat. 6,148,269), in view of with http://www.howstuffworks.com, in view of Bidaud (US Pat. 6,347,265), and in view of J. Mar et al. "Simulations of the positioning accuracy of integrated vehicular navigation systems".

A. <u>As for claims 1, 4, 11</u>:   The broadest claim is considered as claim 1; it is directed to a method of calculating a train wheel size based on a total distance and a total number of wheel revolutions. The examiner respectfully submits that what claim is already known.

The examiner respectfully submits that it is fundamental to obtain a wheel circumference

by dividing a traveled distance by with the total of wheel revolution (wherein a wheel radius is

equal to a circumference divides to 2π - see http://www.howstuffworks.com).

A circle is a shape with all points the same distance from the center. It is named by the center. The circle to the left is called circle A since the center is at point A. If you measure the distance around a circle and divide it by the distance across the circle through the center, you will always come close to a particular value, depending upon the accuracy of your measurement. This value is approximately 3.14159265358979323846... We use the Greek letter π *(pronounced Pi)* to represent this value. The number π goes on forever. However, using computers, mathematicians have been able to calculate the value of π to thousands of places.

The distance around a circle is called the **circumference**. The distance across a circle through the center is called the **diameter**. π is the ratio of the circumference of a circle to the diameter. Thus, for any circle, if you divide the circumference by the diameter, you get a value close to π. This relationship is expressed in the following formula:

$$\frac{C}{d} = \pi$$
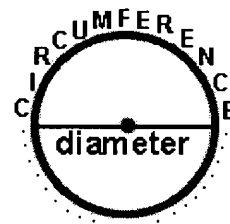
where C is circumference and d is diameter. You can test this formula at home with a round dinner plate. If you measure the circumference and the diameter of the plate and then divide C by d, your quotient should come close to π. Another way to write this formula is: $C = \pi \cdot d$ where $\cdot$ means multiply. This second formula is commonly used in problems where the diameter is given and the circumference is not known.

Claiming that using a total distance (D_{total}), and a total number of wheel revolution

(number-of –turn) to obtain a circumference of a wheel (C above) is a fundamental problem

because: D_{total} is proportional to (C * number-of-turn).

Where: number-of-turn of a wheel could be obtained by a tachometer (this device for using to

determine a rotational speed of a shaft - Bidaud uses a tachometer for sensing rotational speed

because it is fundamental that "tachometer" is an instrument that indicates the speed, usually in

revolutions per minute, at which an engine shaft is rotating. Some tachometers, especially

those used in automobiles, are similar in construction and operation to automotive

speedometers. Other types, often connected directly to the shaft whose speed they indicate, are small electric generators whose output voltage is proportional to speed. This voltage is applied to a voltmeter whose dial is calibrated in speed units. Another type, used only with engines having an ignition system, operates by counting the pulsations of current or voltage in the ignition system, the number of these being proportional to the speed of the shaft), and D_{total} is obtained from a GPS device that moved with that vehicle.

Therefore, C (for a wheel circumference) or $C = \pi \cdot d$ (d is a diameter of that wheel) can be obtained - See a representation from above picture).

Kumar fails to disclose about repeating the determining step a plurality of time.

However, J. Mar et al. teach this step by doing integrated calculations, or adding small segments together to obtain a total distance with the exemplary time period is one second with different monitoring systems (see J. Mar et al., Figs.1 & 4, and section 4).

It would have been obvious to one of ordinary skill in the art at the time of invention to implement Kumar with http://www.howstuffworks.com, and J. Mar et al. to suggest the use of GPS (required by claim 4), and total segments of a traveled distance (obtained from a GPS and integrating together – see FIGURE 4(a) of the submitted drawings) to calculate a train wheel size because that website already teaches fundamental relationships/calculations for a circular shape (such as a wheel), that circle's diameter, and its circumference; a motivation of that web site, and J. Mar et al. 's article is providing readily available formula for that related relationship (of a circular shape) so a user can obtain accurate approximations for a calculation.

B. As for dependent claims 2, 9: The rationales and reference for a rejection of claim 1 is incorporated.

The inventor claims that: determining steps are performed successively with no separation between each period; that is <u>only linear calculations are required</u> for limitations of claim 1 (there is now no separation between each period – see FIGURE 4(a) of the submitted drawings). This requirement makes a wheel size calculation straight-forward, and easier to obtained from what was taught in howstuffworks.com website.

C. <u>As for dependent claims 3, 10</u>: The rationales and reference for a rejection of claim 1 is incorporated.

Now, determining a wheel size where there are (at least) two successive periods; however, a total distance would be obtained by integration of breaking intervals because linear distances are applied for this calculation. A motivation is sum up small linear segments given by GPS to obtain a total moving distance would make a problem of determining a wheel size more simpler as J. Mar taught.

D. <u>As for dependent claims 5, 12</u>: The rationales and reference for a rejection of claim 1 is incorporated.

In estimation, it commonly assumes that "<u>no portion</u> of the total distance corresponds to a section of track having a grade exceeding a grade threshold" – this claimed limitation is obvious because that requirement already makes a task of determining a wheel-size more simpler because in reality, there are sections of tracks having a grade exceeding a grade threshold that makes that determining more complicated, and determining a wheel-size becomes more difficult.

Bidaud suggests about measuring track grading for later calculations (see Bidaud, col.3 lines 19-21).

J. Mar et al. also use GPS technology to obtain accurate positions and wheel speeds of a vehicle via a sensor (see J. Mar et al., Fig.1, and Fig.4).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine Kumar et al., Bidaud, and J. Mar et al. to suggest the use of GPS, and integrations of linear segments of traveled distances (see FIGURE 4(b) of the submitted drawings) to calculate a train wheel size because these are available technologies and creating more accuracy to that calculation taught by those cited references; further, related references teaches about relationships of a wheel-size, and distance.

E. As for dependent claims 2,9:

The rationale and references for above rejection of claim 8 are incorporated.

The examiner respectfully submits that it is clearly obvious with above references a determining step is performed successively with no separation between each period (e.g., a continuously distance).

F. As for dependent claims 7, 14:

The rationale and references for above rejection of claim 8 are incorporated.

The examiner respectfully submits that it is clearly obvious with above references that a period is one second because every requirement parameter is synchronized together – a satellite checking a movement object every second – this is a simple requirement since a total time for movement are easily obtained later on by using same duration of a start of the period and an end of the period – a motivation is to simplify a wheel-size calculation.

G. As for claims 22-24:

The rationale and references for above rejection of claim 8 are incorporated.

Kumar also suggests:

- determining a speed of a train (see Kumar et al., col. 4 lines 60-67); further most movement objects having a sensor to indicate a speed of that moving object;

- determining a parameter of a signal that would be output by a wheel sensor (see Kumar et al., col. 2 lines 26-34 clearly teaches that rpm signals are output by a wheel sensor) ;

- speed of the train is obtained from the positioning system (see Kumar et al., col. 2 lines 26-31, note that a GPS normally obtains starting time, beginning location, and arrival time, destination location; from these data, duration of travel, and traveling distance are obtained; therefore, an average speed of a moving object would be derived from a GPS system.

Allowable subject matter

5. As for dependent claims 6, 13:

The examiner respectfully submits that Bidaud does not disclose that a determining step is performed with known grades from a track database using a position from the positioning system as an index.

6. Remark: see also the technique of using Doppler radar for monitoring speed of Korver et al., US Pat. 6,373,403).; and a coefficient factor from rotation sensor is taken into account for more accuracy – e.g., US Pat. 5,796,613).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CUONG H. NGUYEN whose telephone number is 571-272-6759 (or email address cuong.nguyen@uspto.gov). The examiner can be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, THOMAS G. BLACK can be reached on 571-272-6956. The fax phone number for

the organization where this application is assigned is 703-305-7687.

Information regarding the status of an application may be obtained from the Patent

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system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CUONG   H. NGUYEN
Primary Examiner
Art Unit 3661